

rainfall, 3 inches, occurred at Butte, Mont., at an elevation of 5,716 feet; this station also reported the greatest monthly amount, 8.86 inches. The least monthly amount, 0.21 of an inch, was recorded at Huntington, in eastern Oregon.

The average monthly precipitation with departure from normal for the month of June during the last five years is also shown in the following table for the States of Oregon, Washington, and Idaho, and for those portions of Montana and Wyoming in district No. 12:

Years.	Oregon.		Washington.		Idaho.		Montana.		Wyoming.	
	Mean.	De-parture.	Mean.	De-parture.	Mean.	De-parture.	Mean.	De-parture.	Mean.	De-parture.
1909.....	0.66	-0.94	0.90	-0.96	0.71	-0.46	2.43	+0.31	1.09	+0.04
1910.....	0.97	-0.48	1.03	-0.56	0.22	-0.88	1.17	-1.29	0.16	-1.18
1911.....	1.36	-0.15	1.04	-0.68	2.45	+0.91	4.06	+1.60	2.43	+0.11
1912.....	2.30	+1.16	1.75	+0.37	1.40	+0.10	1.46	-0.69	1.96	+0.16
1913.....	3.10	+1.93	2.82	+1.42	2.87	+1.58	3.37	+1.52	3.36	+1.44

THE RIVERS.

The annual rise in the Columbia River continued during the month. The water had risen rapidly during the latter half of May and at the beginning of June was higher at most points than it had been for several years. The crest of the Columbia River flood came 15 days later than the crest of the Snake River flood, and this was fortunate for the riparian district below the confluence of the two streams. Had the two crests united the resultant flood would have been a serious one. As it was the stages exceeded any since 1903 at all Columbia River points and any since 1899 on the lower Snake River. The Snake River at Weiser was not as high as in 1910 and 1912, so the bulk of the flood water carried by the lower Snake must have come from the Salmon and Clearwater Rivers. The highest stage at Lewiston, Idaho, was 18.6 feet on the 1st, but the highest water of the season was recorded on the 29th of the preceding month. The flood crest in the Kootenai River passed Bonners Ferry on the 4th and 5th of June and the crest in the Pend Oreille River passed Newport on the 15th. The maximum stage at Wenatchee on the Columbia River was 46.9 feet on the 15th and 16th. At and below Kennewick the highest water of the season occurred a few days earlier, due to discharge from the Snake River. The maximum stage at The Dalles was 42 feet, recorded on the 12th. The locks at Cascade Locks were opened on June 24, at a gage reading of 28.8 feet, having been closed since May 30 on account of high water.

Backwater in the Willamette River maintained a stage at Portland that averaged 5.2 feet above the June normal and 7.9 feet above the 15-foot flood stage. The minimum stage was 20.9 feet on the 1st and 30th, and the maximum was 24 feet on the 8th, a maximum that has been equaled only three times in connection with the annual rise in the Columbia River.

The fisheries, pasturage, and warehouse interests were the ones most affected by the flood. Owing to ample

warnings the loss of property was a comparatively small item, but loss due to suspension of business and the expense involved in moving or otherwise protecting property in flooded basements and warehouses was considerable.

The Willamette River was higher than usual for June, as the month in western Oregon was one of exceptionally heavy rainfall, particularly during the last two decades. Maximum stages occurred on the 18th and 19th above Portland, following the period of heaviest rainfall.

MISCELLANEOUS PHENOMENA.

Thunderstorms, in some instances accompanied by hail and sleet, were quite general in central and eastern Washington and Oregon and portions of Idaho, being unusually severe in the last-named State, where they caused some loss of life and property.

Frosts formed in exposed places on several dates at some of the more elevated stations in Oregon and freezing temperatures occurred at other points of high altitude in Idaho, but without causing material injury.

The prevailing winds were from a westerly direction, and there was somewhat less than the usual amount in Idaho. No maximum velocities above 45 miles an hour were reported from any station in the district.

The cooperative observer at Lakeside, Chelan County, Wash., reported, "There was a severe earthquake shock at 9.40 p. m. of the 25th, and also a lighter shock at 2 a. m. of the 26th."

A lunar halo was observed at Medford, Oreg., on the night of the 17th, and solar halos at Portland and Roseburg, Oreg., on several dates.

TORNADO IN WESTERN MONTANA.

By R. F. YOUNG, Section Director.

A storm which from reports of eyewitnesses appears to have been in the nature of a tornado occurred on June 28 in the Kootenai Valley between Libby and Eureka, Mont. The storm was first noticed in the form of a funnel-shaped cloud, at an elevation of about 300 feet above the ground, moving out of the mountains southwest of Libby, traveling in an easterly direction, and accompanied by a loud roaring sound. It followed the valley east, then northward toward Eureka. The whirling was plainly evident from the rotary movement of the debris that was carried by the storm. A large amount of timber was destroyed and some orchards in its path were badly damaged. Forest trees were uprooted, or in some cases twisted off 15 to 25 feet above the ground. Near Ronda, Mont., five empty freight cars and one car loaded with hay were blown from the track. Nearly all the windows in one side of the day coaches of a Great Northern passenger train that was caught in the storm were broken by the hail that accompanied the wind. Hailstones an inch and a quarter in diameter were picked up in the coaches. The path of the storm was about 300 feet wide, and its destructive effect was about 4 miles in extent. Evidence of its passage, however, were noticeable for a distance of 60 miles or more.